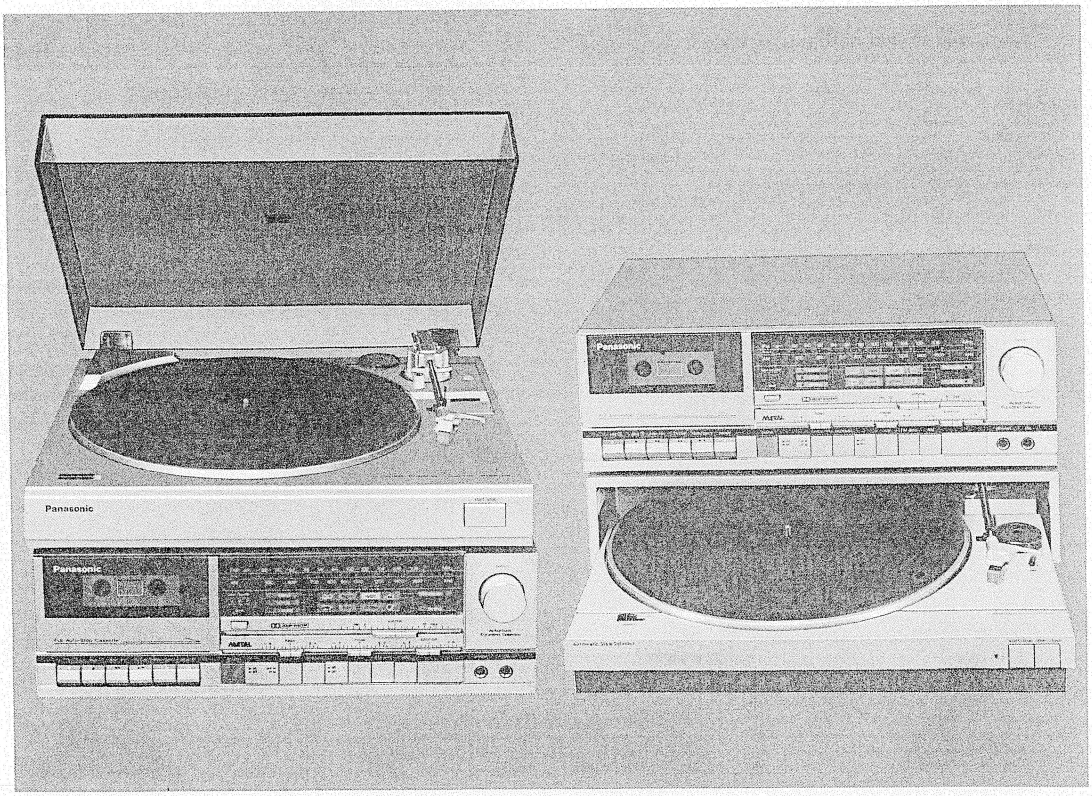
Operating Instructions

Stereo Music System

SG-P200/SF-620/SF-630



Panasonic®

Before operating this set please read these instructions completely.

Dear Music Lover

Your new Panasonic Compact FM/AM Cassette Deck Receiver and Separate Phonograph were manufactured and assembled under exacting quality control standards. The incorporation of the latest advances in design and the use of the most modern components ensure outstanding performance with superb sensitivity and tone quality. Just a few minutes of your time spent reading carefully through this instruction book will assure optimum performance that will bring you continued enjoyment for many years.

NOTICE

The Serial Number of this product may be found on the REAR PANEL. You should note the Model Number and Serial Number in the spaces provided and retain this book as a permanent record of your purchase to aid in identification in case of theft.

MODEL NUMBER . . . . . SG-P200 (Main Unit)
. . . . . (Record Player)
SERIAL NUMBER . . . . . (Main Unit)
. . . . . (Record Player)

Contents

Special Features 1
Rear Panel Information 2
General & Radio Controls 3
Radio Section 3
Cassette Section 4
To Play Tapes 5
Recording 5
Erase and Erase Protection 6
Timer Stand-By Mechanism 6
Phono Section (For SF-620) 7
Phono Section (For SF-630) 8
Maintenance 10
Some Helpful Hints 10
Suggestions for Safety . . . . . Back Cover
Important Information . . . . . Back Cover

Special Features

Radio
- Phase Locked Loop (PLL) system in the FM MPX section for outstanding stereo separation and high performance
- Built-in automatic frequency control (AFC) on FM
- Flywheel tuning knob
- A tuning indicator is provided so that optimum reception can be clearly confirmed visually

Phono (Model SF-620)
- Fully automatic turntable
- Electronically controlled DC motor
- Magnetic type phono cartridge with diamond stylus

Phono (Model SF-630)
- Drawer-shape compactly designed player
- Automatic record size detector
- Record presence detection
- Convenient auto cue-down mechanism
- Phono operation indicator
- Magnetic type phono cartridge with diamond stylus

Cassette
- Full auto-stop, "power-touch" cassette controls
- Dolby* noise reduction system
- One-touch recording system
- Automatic tape selector system for Normal/CrO_2/Metal tapes
- Hard permalloy "MX" rec/playback head for metal tape compatibility
- Timer stand-by mechanism
- Convenient review and cue mechanism
- Automatic recording level control
- Viscous damped eject mechanism

Others
- Automatic function selector system
- Function indicators
- Loudness switch
- Jacks for optional accessories. This includes a microphone input, auxiliary source input and a headphone output.

* Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the Double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

The lightning flash with arrow-head symbol, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE SCREWS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Rear Panel Information

Location

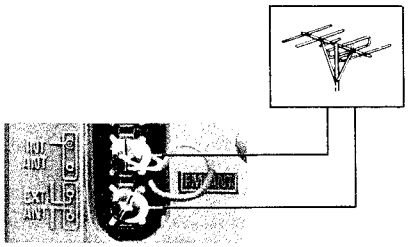
Find a suitable place for this unit away from any source of heat, and one that allows at least 2-3 inches of ventilation space above and behind the chassis. Keep this unit away from large metallic object which may interfere with the proper operation of the set.

FM antenna **(FM ANT)**

Built-in line antenna (INT. ANT): This set has a built-in FM line antenna installed at the factory. Stretch out the power cord completely and change the direction of the power cord until optimum FM reception is obtained.

FM outdoor antenna (EXT. ANT): Necessary in mountainous regions, inside reinforced-concrete buildings, etc. (option).

For best results, disconnect the built-in line antenna wire from the FM antenna terminals before connecting an external FM antenna.

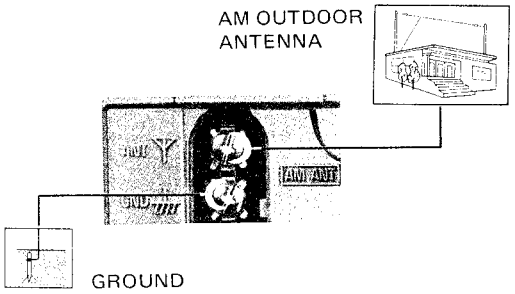


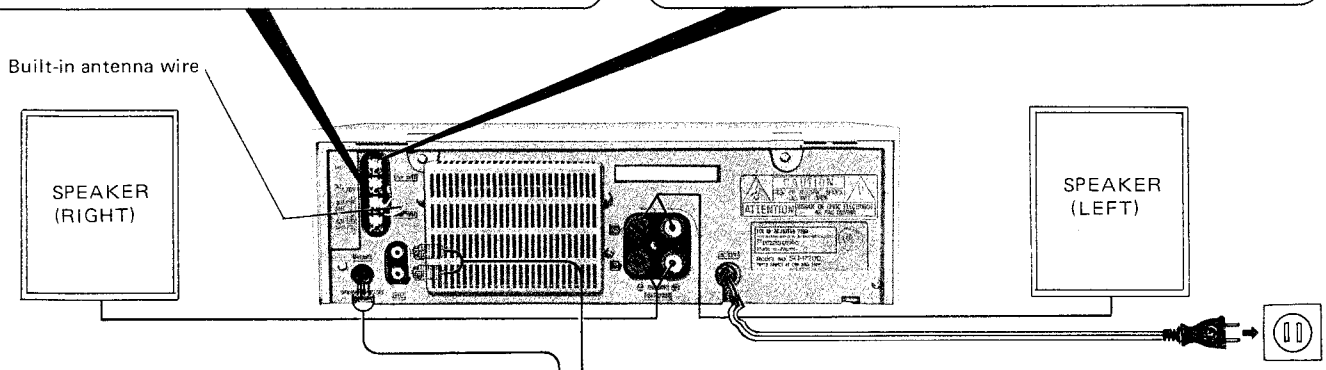
AM outdoor antenna and Ground **(AM ANT)**

Connect an AM outdoor antenna (option) to the AM antenna terminal (Y) in mountainous regions, inside reinforced-concrete buildings, etc.

Use 16-40 feet (5-12 m) of vinyl-covered wire horizontally at the window.

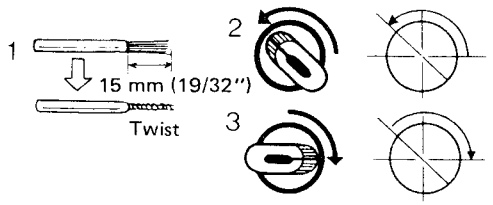
To reduce noise, connect a wire between the ground terminal ⏚ (GND) and ground.

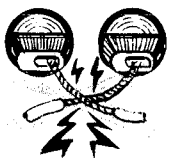




Connection of speaker wires:

1. Strip off the outer covering, and twist the center conductor.
2. Turn completely to the left.
3. Insert wire and turn completely to the right. Pull wire to be sure it won't come out.





To prevent damage to circuitry, never short-circuit plus (+) and minus (–) speaker terminals.

For best results speakers should be positioned about ear level. Place them at an equal distance from your listening position, not more than 10-15 feet apart to prevent exaggerated stereo effects. A few listening tests will determine the best location for maximum clarity.

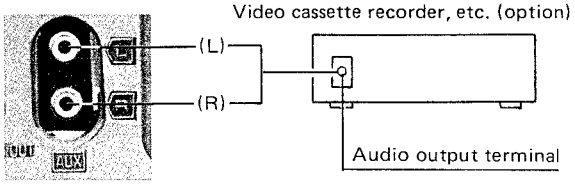
AC power cord

Plug into a convenient standard electrical AC outlet in your home.

IMPORTANT: **This unit must be powered from a 120V AC line (60 Hz). Do not attempt to operate this set from any other type of power source which may result in potential electrical shock or fire hazard.**

Auxiliary input jacks (AUX)

Cassette or 8-track stereo tape deck (playback only), second tuner, or audio output of a video unit. If the video unit has only one audio output terminal, use a Y-type cord (monaural to stereo) to make the connection.

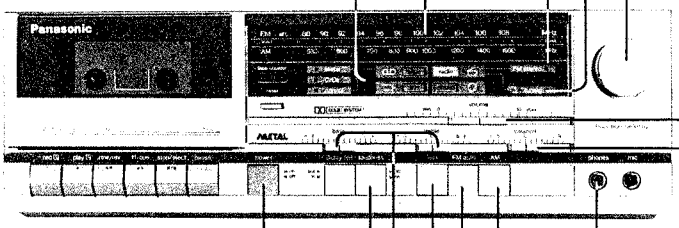


DC outlet **(SIGNAL IN/DC OUT)**

This terminal is used only for connecting with the automatic record player Model SF-620 or SF-630.

Do not connect any other external program source.

General & Radio Controls



Function indicators
Indicates the program source being operated.

Dial pointer

FM stereo indicator **(FM stereo)**

Tuning indicator **(tuning)**
Lights up when the radio station is properly tuned.

Tuning control knob **(tuning)**

Volume control **(volume)**
Set this control to its minimum ("0") position before switching on the power.

Balance control **(balance)**
Adjust this control so that sound seems to come from the center (between your left and right speaker systems).

Power switch **(power)**
After operation, always switch to "⏻ off" position.

Loudness switch **(loudness)**
When listening at low volume levels, set this switch to the "⏻ on" position to boost the bass and treble tone responses.

Bass and Treble controls **(bass** and **treble)**
The bass control will vary the low-frequency sound range, and the treble control will vary the high-frequency sound range.

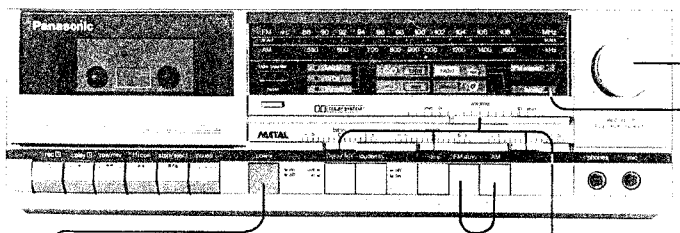
Headphones jack **(phones)**
Use 8-ohm or higher impedance stereo headphones (optional). The speakers will be automatically disconnected when the headphones are plugged in. When unplugging the headphones, turn the volume level to the minimum position to prevent speaker damage.

Function selector switch
This unit is equipped with automatic function selector system. Select the desired program source.
Set the power switch to the "on" position (⏻ → ⏻) before selecting a program.

To listen to radio broadcasts	Select "FM auto" or "AM".
To operate an auxiliary program source	Select "aux".
To play a disc	Push the start/stop button (on Phono).
To play tape	Push the play button.

NOTE: There is no need for a tape or phono selector switch. To change modes to tape or phono, simply press the play (▶ play) or the start/stop button.

Radio Section



1 **"power"**
"⏻ off" → "⏻ on"

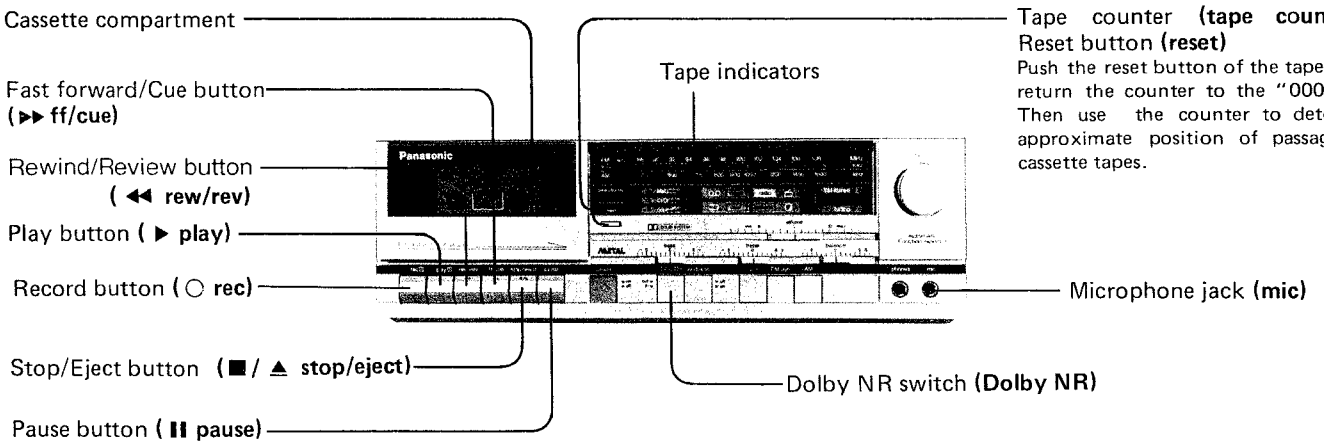
2 **"selector"**
Select "FM auto" or "AM".
The "FM auto" position automatically switches the radio to "stereo" when the program is being broadcast in FM stereo. Thus, the FM stereo indicator lights up.

3 **"tuning"**
Adjust to the desired station.
Dial pointer indicates your station.

The tuning indicator will light up when the radio station is properly tuned in.

4 Adjust to your sound preference. (volume, balance, bass and treble.)

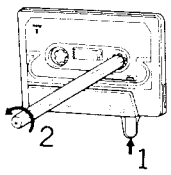
Cassette Section


Cassette compartment
Fast forward/Cue button (▶▶ ff/cue)
Rewind/Review button (◀◀ rew/rev)
Play button (▶ play)
Record button (○ rec)
Stop/Eject button (■/▲ stop/eject)
Pause button (❚❚ pause)
Tape indicators
Tape counter (tape counter) and Reset button (reset)
Push the reset button of the tape counter to return the counter to the "000" position. Then use the counter to determine the approximate position of passages on the cassette tapes.
Microphone jack (mic)
Dolby NR switch (Dolby NR)
Panasonic

Selection of Cassette Tapes

Use only high quality tape up to the length of C-90. Do not use C-120 or C-180 tapes with this unit. This tape can easily become broken or stretched if not used with extreme care and may get tangled with the capstan shaft and rubber pressure roller.

Note: Should the tape develop a slack (arrow 1), tighten the tape tension by lightly turning the hub of the cassette (arrow 2) with a certain pencils or pens before inserting the cassette tape into the cassette compartment. Your finger may also be used to take up the slack.

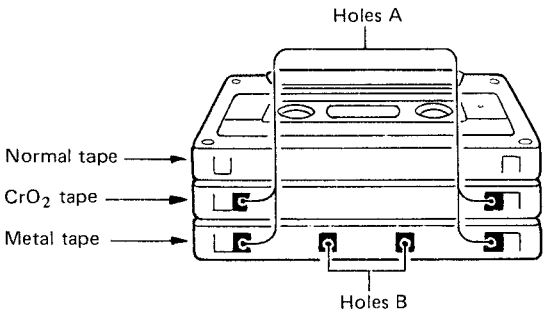


- Avoid storing cassette tapes in places where the temperature and/or humidity is high; and in places where there are strong magnetic fields (i.e. speaker, motor).

Automatic Tape Selector System

This cassette deck automatically detects the types of tape being used, and adjusts for the proper bias and equalization.

Detection holes of various tapes



Type	Brand	Tapes
Normal	Scotch Maxell TDK	XS-I UD, XLI-S AD, OD
CrO_2	Scotch Maxell TDK	XS-II XLII, XLII-S SA
Metal	Scotch Maxell TDK	METAFINE MX MA

There might be difference on output levels (approx. 2 - 3 dB) among th cassette tapes.

1. "Metal" lights when no tape has been loaded.
2. Do not record with metal tapes that do not have holes B (high distortion will result).
   Playback of metal tapes is perfectly normal even if there are no holes B. In this case, the "CrO_2" tape indicator lights.)

Full Auto-Stop System

When the tape reaches its end during playback, recording, fast forward or rewind mode of operation, it automatically stops. However, if the power supply is switched off while any cassette button is in operation, the full auto-stop system will not operate. In this case, disengage the cassette tape from the tape head mechanism by pushing the stop/eject button. Then remove the cassette tape.

Power-Touch Controls

This cassette deck is equipped with power-touch controls and can be operated simply by pushing them lightly. The mode of cassette operation (except the recording mode) can be changed directly without pushing the stop/eject button.

The Dolby Noise-Reduction System

This unit includes a Dolby noise-reduction system which reduces noise to a remarkable degree.

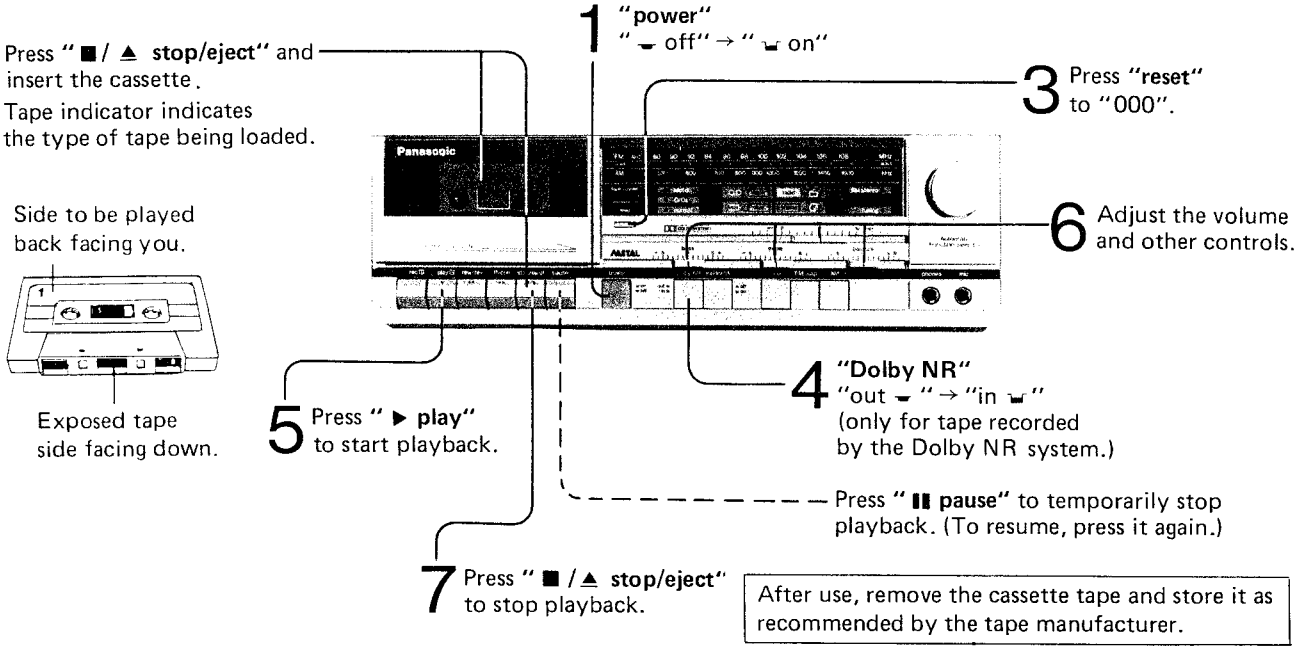
Briefly, the system works as follows: At low sound levels (where tape noise is most noticeable), the level of the higher frequency portion of the sound is boosted during recording. The lower the sound level the greater the high frequency boost.

During playback the low level high frequency sounds are attenuated by the same amount by which they were boosted during recording to restore them to the original level.

As the tape noise also attenuated during playback a significant reduction of tape noise can be achieved, thereby improving the signal to noise ratio.

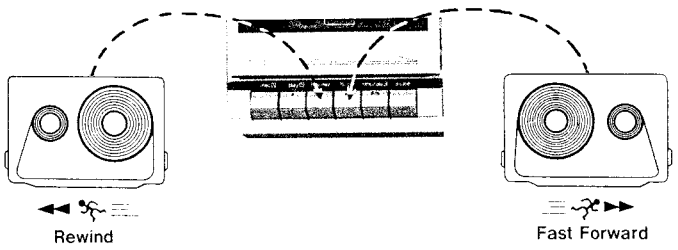
When making recordings with the Dolby system, it is especially important to use only high quality tapes and to match the tape selector to the tape being used (Normal, CrO_2, or Metal).

To Play Tapes


1 "power"
" off" → " on"
2 Press " ■ / ▲ stop/eject" and insert the cassette.
Tape indicator indicates the type of tape being loaded.
3 Press "reset" to "000".
Side to be played back facing you.
Exposed tape side facing down.
6 Adjust the volume and other controls.
4 "Dolby NR"
"out " → "in "
(only for tape recorded by the Dolby NR system.)
5 Press " ▶ play" to start playback.
Press " ❚❚ pause" to temporarily stop playback. (To resume, press it again.)
7 Press " ■ / ▲ stop/eject" to stop playback.
After use, remove the cassette tape and store it as recommended by the tape manufacturer.

Rewind or Fast Forward Operation

To rewind the tape to the left reel, depress the rewind/review button.
To advance the tape to the right reel, depress the fast forward/cue button.

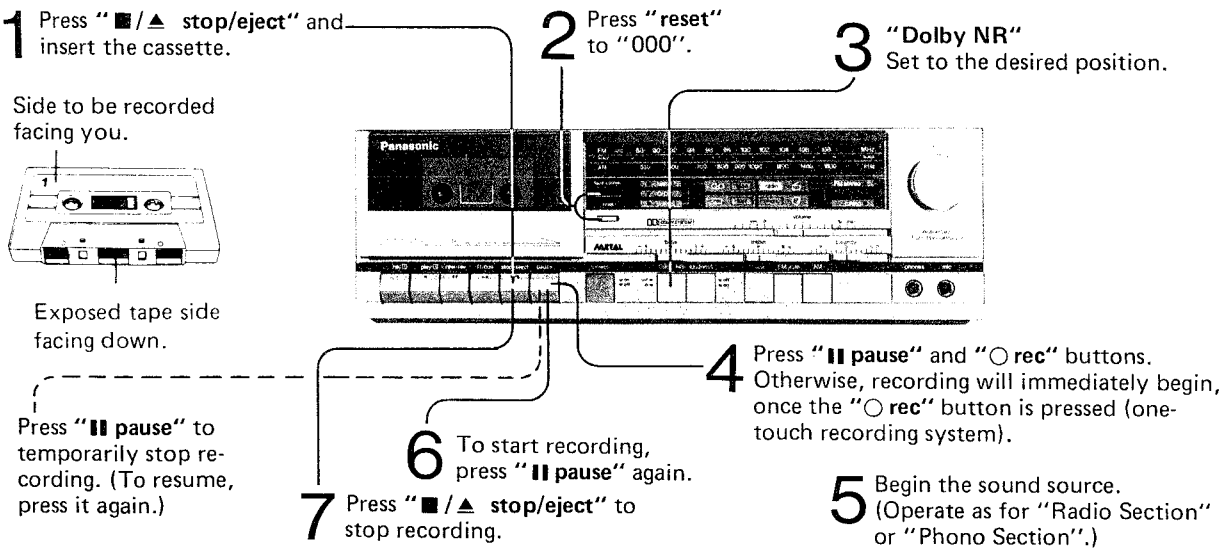


Review or Cue Operation

During playback, you can review or cue the tape for quick location of your favorite program.
To operate, push the rewind/review button or fast forward/cue button half-way. The review or cue will function while the button is pushed.

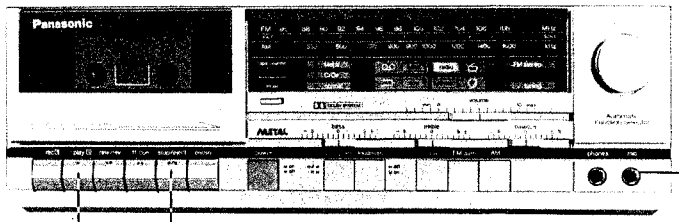
Recording from Radio or Phono

▶ Read the "Radio Section" or "Phono Section".


1 Press " ■ / ▲ stop/eject" and insert the cassette.
2 Press "reset" to "000".
3 "Dolby NR" Set to the desired position.
Side to be recorded facing you.
Exposed tape side facing down.
4 Press "❚❚ pause" and "○ rec" buttons. Otherwise, recording will immediately begin, once the "○ rec" button is pressed (one-touch recording system).
Press "❚❚ pause" to temporarily stop recording. (To resume, press it again.)
6 To start recording, press "❚❚ pause" again.
5 Begin the sound source. (Operate as for "Radio Section" or "Phono Section".)
7 Press "■ / ▲ stop/eject" to stop recording.

- Volume, balance and tone control settings do not affect recording level and tonal quality.

Recording from Microphone



1 Press "▶play". 2 Press "■/▲ stop/eject".

3 Connect the microphone (optional). To prevent howling, reduce the volume level, or place the microphone away from the speakers, or use headphones (optional).

4 Follow steps 1 to 7 (except step 5) of "Recording from Radio or Phono".
NOTE: Recording can be done on both channels by using one microphone.

- You can mix the sound of your voice from the microphone with the music on the radio, phono or the tape. Please refer to the following instructions.

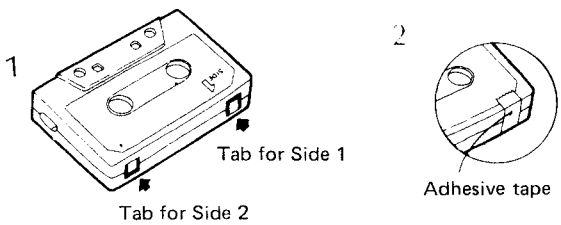
For mixing play:
1. Begin your desired sound source and connect the microphone.
2. Begin mixing the sounds from the microphone with the other sound source.
3. For recording the mixed sound, follow the instructions from "Recording from Radio or Phono".

Erase and Erase Protection

Erasing
Any previously recorded material on a tape is automatically erased when the tape is used for recording again and only the new recorded sound will remain. To erase the tape without adding a new recording, proceed as follows:
1. Disconnect (unplug) the microphone from the microphone jack.
2. Function selector switch → select to the "aux" position.
3. Place the unit in the record mode. All previous recordings will be erased.

Note: If the microphone is not unplugged, unwanted background noise will be recorded during erasing.

Erase-Protection
1. The cassette housing incorporates a convenient erase-protection device to prevent accidental erasure. When the small "tabs" at the rear of a cassette are broken out, the erase-protection device will be activated, preventing accidental erasure of pre-recorded tapes. To protect side 1 recording, break out the tab for side 1. For protection of side 2, break out the tab for side 2.
2. If, for some reason, you want to record on a track for which the "tab" has already been removed, simply cover the slot with a small piece of adhesive tape.



Timer Stand-By Mechanism

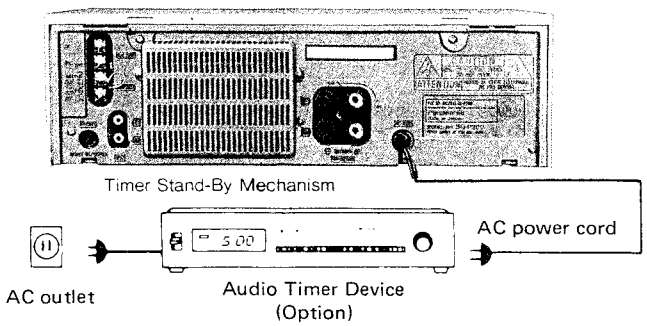
This unit can be connected to an optional audio timer device. Refer to the wiring connection shown here, and carefully read the timer device's operating instructions for more details.
NOTE: The cassette tape should be in its fully rewound "start" position.

A. Timer Recording:
1. Switch the power to the unit "on" ( ).
2. Set the unit according to the "Recording from radio or phono".
3. Push the stop/eject button and release the pause button.
4. Set the required time on the audio timer device. (The electric current to this unit turns off when the timer device is set.)
5. Make sure that the power to this unit is turned off by the timer device. Then press the record button.
6. When the preset time comes, the timer functions and at the same time this unit is turned on and recording will automatically start.

B. Timer Playback:
1. Set the unit to the desired listening levels (i.e. volume, balance, bass, treble, etc.).
2. Make sure to push the stop/eject button.
3. After setting the required preset time, and once the electric current to this unit has been turned off by the timer device, depress the play button.
4. When the preset time comes, the timer will function, thus playback will start automatically.

NOTE: The radio can also be timer activated. Set the unit as for radio operation.

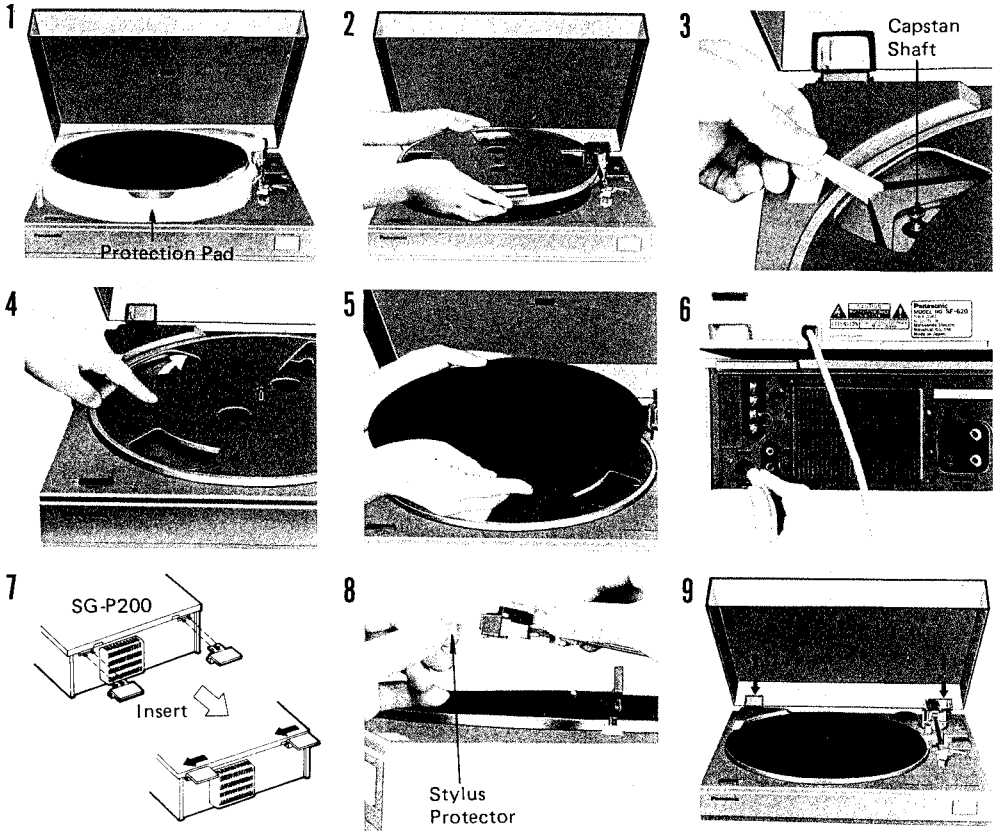
When setting the timer device, please take care so that the timer function will not be over before the tape reaches its end. If power supply is switched off during playback or recording mode, full auto-stop system will not function and the depressed cassette buttons will not return to their original positions. It may cause damage to the tape head mechanism.



Phono Section (For SF-620)

Set up

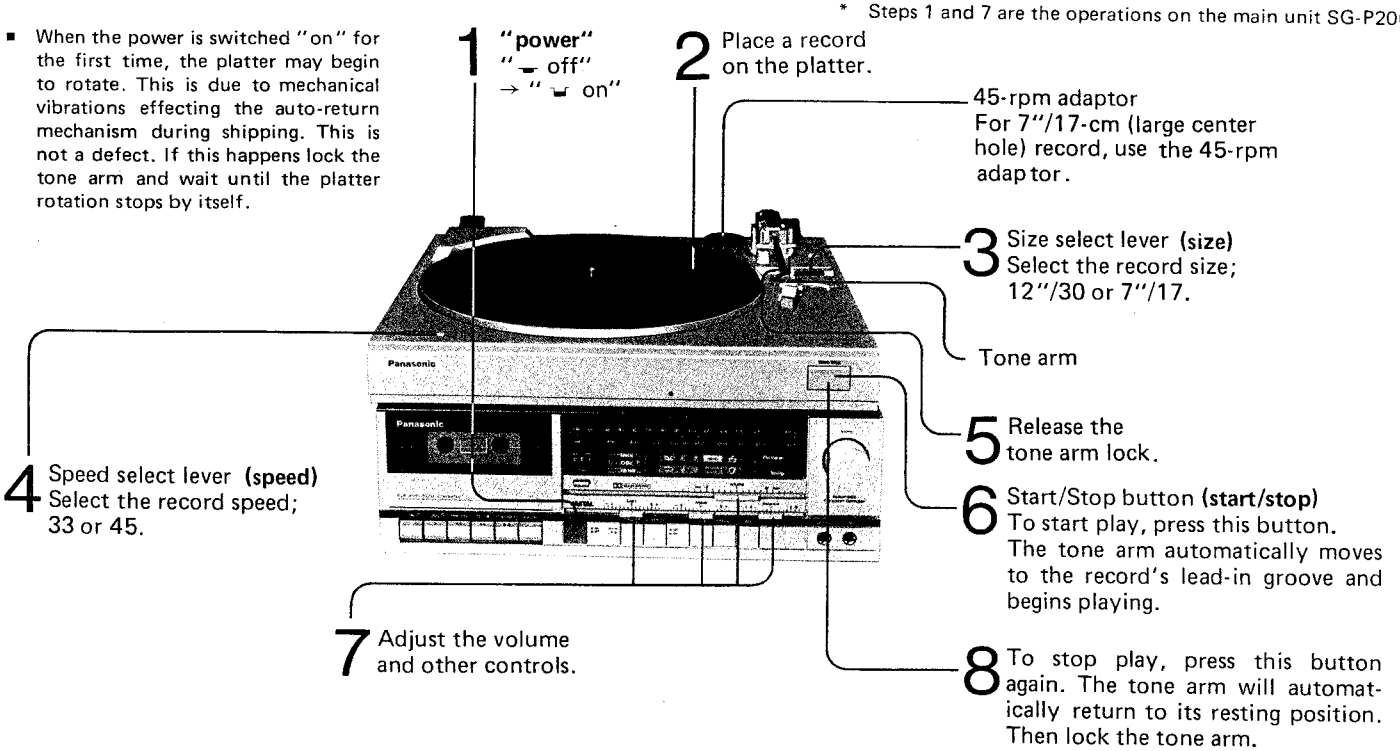
1. Remove the protection pad.
   CAUTION: Platter and platter mat are enclosed with the protection pad. Do not throw them away. And also store the pad for use when transit.
2. Place the platter on the turntable.
3. Place the drive belt properly around the capstan shaft using the yellow ribbon. (Speed select lever should be set to "33" position, and make sure the drive belt is not twisted.) After placing, remove the ribbon carefully.
4. Rotate the platter clockwise by hand, five times, to ensure that the mechanism is in the neutral position, and ascertain the drive belt is not twisted.
5. Place the mat on the platter.
6. Connect the DC connection cord to the DC outlet on the rear of the main unit SG-P200.
7. When mounting the player unit on the SG-P200 main unit, use the record player metal support (2 pcs., located on the packing pad).
   To install: Insert the legs of the record player supports into the slots on the rear panel of the SG-P200, then lock the supports firmly by sliding them to the left.
8. Remove the stylus protector.
   DO NOT THROW IT AWAY.
   (The stylus protector is to guard the stylus tip from damage, if the tone arm is accidentally dropped.)
9. To remove the dust cover, simply lift it gently from the hinges. When removing, dust cover should be in "open" position.



To Play Discs

* Steps 1 and 7 are the operations on the main unit SG-P200.

- When the power is switched "on" for the first time, the platter may begin to rotate. This is due to mechanical vibrations effecting the auto-return mechanism during shipping. This is not a defect. If this happens lock the tone arm and wait until the platter rotation stops by itself.


1 "power" "off" → "on"
2 Place a record on the platter.
45-rpm adaptor
For 7"/17-cm (large center hole) record, use the 45-rpm adaptor.
3 Size select lever (size)
Select the record size; 12"/30 or 7"/17.
Tone arm
5 Release the tone arm lock.
6 Start/Stop button (start/stop)
To start play, press this button.
The tone arm automatically moves to the record's lead-in groove and begins playing.
4 Speed select lever (speed)
Select the record speed; 33 or 45.
7 Adjust the volume and other controls.
8 To stop play, press this button again. The tone arm will automatically return to its resting position. Then lock the tone arm.

- At the end of the record, the tone arm will return to the resting position automatically and the turntable will shut off (auto-return).

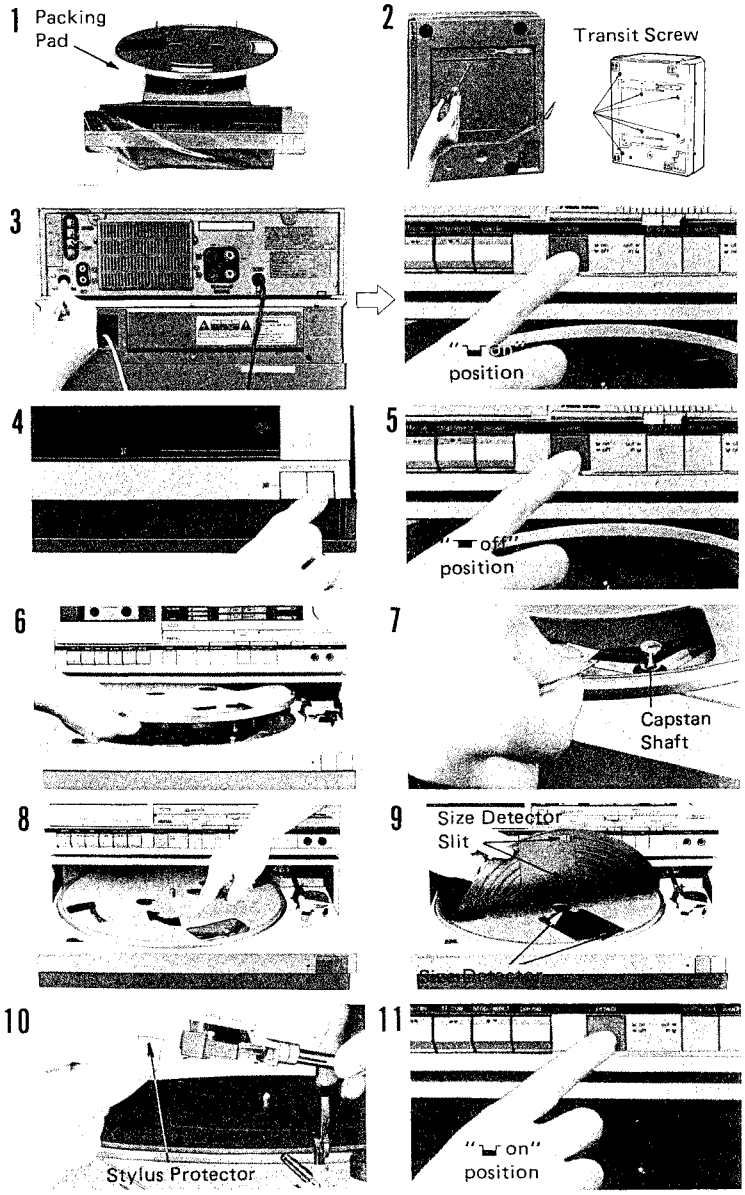
AFTER USE LOCK THE TONE ARM

Phono Section (For SF-630)

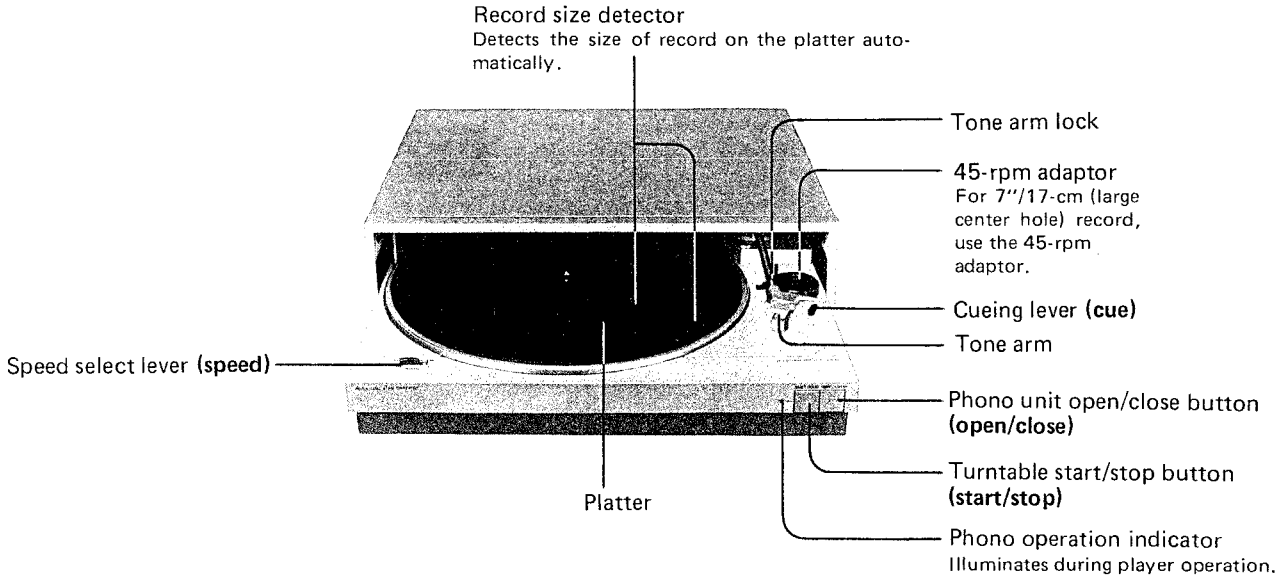
Set up

1. Remove the packing pad.
   CAUTION: Platter is enclosed with the packing pad. Do not throw it away. And also store the pad for use when transit.
2. Remove the transit screws (6 pcs.) with spacers located on the bottom of the unit. These must be stored for future packing.
3. Connect the DC connection cord to the DC outlet on the rear of the main unit SG-P200. Set the power switch of SG-P200 to "⏻ on" position.
4. Push the phono unit open/close button.
   Phono cover opens and the player unit will move outward.
5. Set the power switch to "⏻ off".
6. Place the platter on the turntable.
7. Place the drive belt properly around the capstan shaft using the yellow ribbon. After placing, remove the ribbon carefully.
8. Rotate the platter clockwise by hand, five times, to ensure that the mechanism is in the neutral position, and ascertain the drive belt is not twisted.
9. Place the mat on the platter.
   The size detector slits on the mat should be aligned with the size detectors on the platter.
10. Remove the stylus protector. DO NOT THROW IT AWAY.
    (The stylus protector is to guard the stylus tip from damage, if the tone arm is accidentally dropped.)
11. Setting up is completed, set the power switch to "⏻ on".

CAUTION: Do not mount the player unit on the main unit SG-P200. Player unit should be placed underneath the main unit SG-P200.



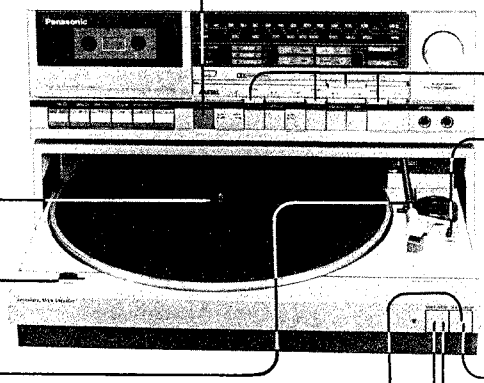
Controls


Record size detector
Detects the size of record on the platter automatically.
Tone arm lock
45-rpm adaptor
For 7"/17-cm (large center hole) record, use the 45-rpm adaptor.
Cueing lever (cue)
Tone arm
Speed select lever (speed)
Phono unit open/close button (open/close)
Turntable start/stop button (start/stop)
Platter
Phono operation indicator
Illuminates during player operation.

To Play Discs

- When the power is switched "on" for the first time, the platter may begin to rotate. This is due to mechanical vibrations effecting the auto-return mechanism during shipping. This is not a defect. If this happens lock the tone arm and wait until the platter rotation stops by itself.

* Steps 1 and 8 are operations on the main unit SG-P200.



1 **"power"**
"⏻ off" → "⏻ on"

2 Push **"open/close".**
The phono cover opens and the player unit moves outward

3 Place a record on the platter.

4 **"speed"**
Select the record speed; 33 or 45.

5 Release the tone arm lock.

6 Push the **"open/close"** again.
Player unit will return into the set. (Player unit will also operate in the open position.)

7 **"start/stop"**
To start play, press this button. The tone arm automatically moves to the record's lead-in groove and begins playing.

8 Adjust the volume and other controls.

To interrupt play, simply move the cueing lever to " ▼ ". To resume play, set the cueing lever to " ▼ ".

9 To stop play, press this button again. The tone arm will automatically return to its resting position. Then lock the tone arm.

Following operations are also possible.

- Manual Operation

Move the tone arm to the desired position on the record.

- Using the Cueing Lever

1. Cueing lever to " ▼ " position.
2. Move the tone arm to the desired position on the record.
3. Push the "open/close" button.
   Player unit will back into the set and the tone arm will lower onto the record automatically and record play will start. (auto cue-down)

- At the end of the record, the tone arm will return to the resting position automatically and the turntable will shut off (auto-return).
- This unit will not operate without a record on the platter.
- When the player unit is in moving position, disc sound heard from the speakers will be noticeably reduced.
- When the platter begins rotating, click noise will be heard. This is caused when auto size detector detects the record size and is not a defect. It will disappear within a few seconds.

AFTER USE, LOCK THE TONE ARM.

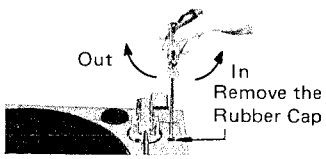
* Above steps are only for standard size 12" (30 cm) or 7" (17 cm) records. For 10" (25 cm) records or other non-standard records, operate the unit manually.

Adjustments (For SF-620 & SF-630)

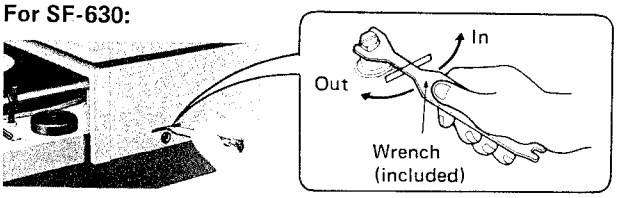
■ STYLUS SET-DOWN POSITION

The stylus set-down position can be adjusted by turning the stylus set-down adjusting cam.
If the tone arm descends outside of the record, turn the cam counterclockwise, and if the tone arm sets down on the inner section of the record, turn the cam clockwise.

For SF-620:



For SF-630:

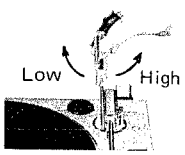


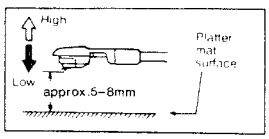
1. Push the open/close button.
2. Place a record on the platter.
3. Set the power switch to "⏻ off".
4. Remove the rubber cap on the right side of the set. The stylus set-down adjusting knob (white) is inside.
5. Turn the knob with the wrench (included in SF-630 only).

■ TONE ARM LIFTING HEIGHT POSITION

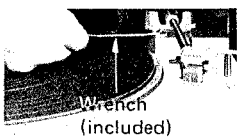
The tone arm lifting height (clearance between the stylus tip and the platter mat surface) has been adjusted to approx. 5-8 mm (3/16"-5/16") at the factory. If the clearance is too big or too small, turn the adjusting screw clockwise to decrease it or counterclockwise to increase it.

For SF-620:





For SF-630:



1. Push the open/close button.
2. Release the tone arm lock.
3. Move the cueing lever to " ▼ " position to make the adjusting screw accessible.
4. Turn the screw with the wrench (included in SF-630 only).

Maintenance

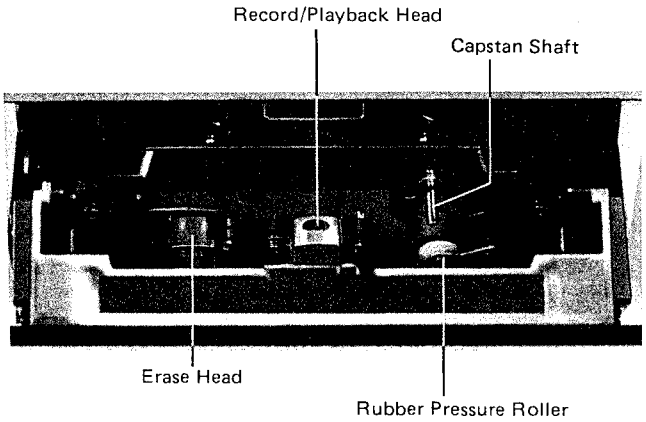
Head Cleaning

The record/playback head and erase head in the cassette deck may accumulate dust and tape residue, causing poor and distorted sound. This residue should be cleaned periodically (about every 10 hours of playing and recording time).

CAUTION: To prevent costly damage to the tape recorder:
Do not use any solution other than alcohol for head cleaning. Never touch the record/playback and erase heads with metal objects such as screwdrivers and never bring a magnet close to the tape mechanism.

Using cotton swab:

1. Press the stop/eject button. Remove the cassette tape from the cassette compartment.
2. Clean the record/playback and erase heads, rubber pressure roller and the capstan shaft with a cotton swab (or with a soft, lint-free cloth) slightly moistened with alcohol.

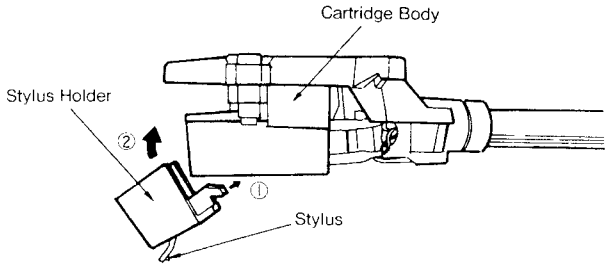


Stylus Replacement

Use EPS-43STSD (diamond type) stylus.

Replace the stylus at the first sign of wear to assure pleasant sound at all times and to prevent damage to records.

1. Be sure to turn the power "off" before replacing the stylus to avoid damage to your unit or speakers.
2. Lift the tone arm to a position that will make the stylus accessible.
3. Gently remove worn stylus by gripping the top of stylus holder and pull it downward.
4. Replace the new stylus by first inserting the tail of stylus holder into the opening of the cartridge body. Then push it gently upwards until it is properly secured.



External Surfaces

To clean, use a soft, dry cloth. If the surfaces are extremely dirty, use a soft cloth soaked in a detergent (such as the ones used for washing dishes; diluted to 1/5 or 1/6 strength), and then wring the cloth well. Wipe once again with a soft, dry cloth.

■ Avoid spray-type insecticides

Insecticides might cause cracks or "cloudiness" in the cabinet and plastic parts of this unit. The gas in such sprays might be ignited suddenly.

■ Never use alcohol or paint thinner

These and similar chemicals should never be used. They may damage the finish.

■ If trouble occurs

If, during operation, the sound is interrupted or lamps no longer illuminate, or if abnormal odor or smoke is detected, immediately disconnect the power cord plug, and contact your dealer or an Authorized Panasonic Service Center.

Some Helpful Hints

When Using	Symptom	Probable Cause	Possible Remedy
RADIO	● Background noise (hiss) is higher during FM STEREO broadcast than during FM MONO reception.	● It is normal for FM Stereo to have higher noise level than FM Mono broadcast.	● Turn tone control to minimum position. ● Connect an external FM Antenna to the FM ANT terminal on the rear panel for better reception.
	● Noise is heard when motor vehicles pass nearby.	● Ignition noise from the engine of the motor-vehicle.	● Change direction of FM external antenna away from the street.
	● Noise is heard continually during "FM Stereo & FM monaural broadcasts" reception.	● Antenna placement is incorrect.	● Select the best location of the FM external antenna by trying different directions and placement until optimum reception is achieved.
PHONO	● Abnormal Noise (distortion or unusual vibration, scratchiness, etc.)	● Dust on the disc or on the tip of the stylus.	● Any dust on the surface of the disc and on the tip of the stylus interferes with satisfactory reproduction. Be sure therefore, to clean away dust completely, using a cleaner or other effective method.
		● The stylus is bent, or out of position.	● If positional adjustment or stylus cleaning fails to correct sound output, stylus may be chipped and requires replacement. Refer to "Stylus Replacement".
		● The stylus is worn out.	● The stylus can be used for up to 500 hours depending on condition and care of records and equipment. If used longer, noise will increase and the disc may be damaged. Replace stylus with a new one. Refer to 'Stylus Replacement".
		● The disc is worn out.	● Do not use a worn out disc.
CASSETTE TAPE RECORDER	● No Sound (mechanical defects)	● Cassette tape is worn out, or is caught on the head or the capstan shaft.	● Replace or remove the cassette tape from the cassette compartment.
		● Pause button is left in the "locked" position. (Tape does not move)	● Pause button should be "released".
	● Poor or Weak recording or playback, or incomplete erasure.	● Dirty REC/PLAY and ERASE heads.	● Clean heads of tape mechanism according to "Head Cleaning" instructions in this booklet.
COMMON	● No Sound (from speakers)	● AC cord loose or disconnected. ● Speaker cords are disconnected.	● Make sure AC cord and speaker cords are securely connected.
		● Selector switch is not correctly set.	● Set the Selector switch to the correct function to which you want to listen.
		● Headphones left in the Headphone jack.	● Unplug the headphones.
		● Volume control is set to minimum position.	● Turn Volume control toward maximum position.

Suggestions for Safety

Before using this unit, be sure to read applicable items of the operating instructions and these safety suggestions carefully ; and afterwards keep them handy for future reference. Take special care to follow the warnings indicated on the unit itself as well as in the operating instructions.

1. **Avoid places where there is water or humidity.**
Do not use this unit near a bathtub, washbasin, swimming pool, or the like. Damp basements should also be avoided.

2. **Don't allow water or any foreign object to get inside this unit.**
Don't place small metal objects or anything containing liquid on or near the unit.

3. **Avoid placement of the unit where it will be exposed to the direct rays of the sun, or where ventilation is inadequate.**
Don't place this unit in a bookcase or between cabinets, or where curtains or furniture may obstruct the ventilation holes.

4. **Place this unit away from heat-emitting appliances.**
Never place this unit near a radiator, heat register, stove, or any other heat-emitting equipment. (Including Amplifiers)

5. **Placement**
Place the unit on a stable, vibration-free, level shelf or stand.

6. **Check the voltage rating of this unit before connecting the unit to a power supply.**
Be sure to connect the unit only to the type of power supply indicated in the operating instructions, or as indicated on the unit itself.

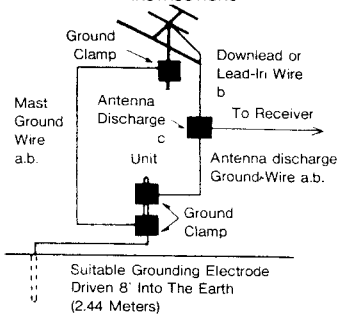
7. **Concerning the power outlet(s) of this unit.**
If this unit has a built-in electric power receptacle, be sure to connect only equipment with a power rating not exceeding that indicated by the receptacle of this unit. (Only connect audio equipment to this outlet.)

8. **Care of the power cord and plug.**
Take care that the cord is not bent sharply (especially near its connection to the unit or near the plug), that nothing is placed on it, and that it is not pinched or crushed. Never take hold of the plug or cord if your hand is wet, and always be sure to grasp the plug body when connecting or disconnecting it.

9. **Use of a cart or stand.**
When deciding on a cart or stand, be sure to follow the recommendations by the manufacturer.

10. **Outdoor antenna grounding.**
If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges. Section 810 of the National Electrical Code, ANSI/-NFPA No. 70-1981, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
See the figure at right.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



a) Use No. 10AWG (5.3mm²) copper or No. 8AWG (8.4mm²) aluminum or No. 17 AWG (1.0mm²) copper-clad steel or bronze wire, or larger as ground wires for both mast and antenna discharge ground wire.
b) Secure lead-in wire from antenna to antenna discharge unit and mast ground wire to house with stand-off insulators, spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
c) Mount antenna discharge unit as closely as possible to where lead-in enters house.

11. **Power lines**
When installing an outdoor antenna, install it as far as possible from power lines.

12. **If the unit will not be used for a long period of time:**
Be sure to disconnect the power cord.

13. **Maintenance**
Refer to the operating instructions for details.

14. **Never attempt repairs yourself:**
(a) If the power cord or plug is damaged.
(b) If a foreign object or liquid falls into the unit.
(c) If the unit is exposed to rain.
(d) If the unit does not function normally, or if operation shows an unusual change.
(e) If the unit has been dropped and the cabinet or chassis are damaged ·····etc.
Unplug the power cord and consult with a qualified technician (or the dealer from whom the unit was purchased or the nearest service center).

15. **Repairs**
Except for adjustments explained in the operating instructions, do not attempt any repairs yourself. Be sure to request service from a qualified technician (or your dealer or nearest service center).

Important Information

LIMITED WARRANTY
Please read your Limited Warranty Card (enclosed with this unit).

PRODUCT ANALYSIS CARD
Please detach the Panasonic Product Analysis Card (or the Purchase Information Card) from the Warranty Card, fill it out and mail it at your earliest convenience to the address indicated on the card. It will help us serve you better and enable us to contact you in the event it becomes necessary to do so.

PRODUCT SERVICE
Before bringing or mailing your set to a servicenter, check the "Some Helpful Hints" chart for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the Directory of Authorized Servicenters (enclosed with this unit) **to locate a convenient servicenter,** or consult your Panasonic dealer for instructions.

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